

semiconductor layer on a substrate held at a temperature of 950°C or higher by introducing p-type dopant source, nitrogen source and Group III source on said substrate; and

*b1 b2 wu*  
a cooling process for cooling the substrate bearing said p-type nitride semiconductor layer,

wherein during said cooling process, the substrate is in an atmosphere containing 0% - 50% hydrogen, and the temperature of the substrate is reduced to approximately 600°C, and

wherein the hole carrier concentration of said p-type nitride semiconductor layer decreases during said cooling process.

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--13. (New) The method for manufacturing p-type nitride semiconductor recited in claim 1 or claim 2,

*b2*  
wherein said cooling process cools the substrate from the substrate temperature in said semiconductor layer forming process to 600°C within 5 min.

14. (New) The method of manufacturing the p-type nitride semiconductor recited in claim 1, wherein the hydrogen content of said atmosphere is greater than 0%. --